U.S. Army
Corps of Engineers

LORSS

Lake Okeechobee Regulation Schedule Study

July 2006

Agenda

- Background
- Public Meeting Summary
- Study
  - Objectives
  - Assumptions and Constraints
  - Alternatives
  - Performance Measures
- Tentatively Selected Plan
- Summary
- Questions

Background

JUL 2000
Current WSE

2003 - 2005
High Water/ Hurricane Activity

OCT/NOV 2005
NEPA Scoping Meetings

JUL 2006
Tentatively Selected Plan

JAN 2007
Implement new Regulation Schedule

Summary of Public Comments

- Supported plan to provide healthier lake
- Against plan due to high estuary releases
- Release water south
- Water quality throughout the state
- Increase storm water treatment areas and storage reservoirs
- Did not meet study goal and objectives
- Release constant flows / reduce high discharges
- Economic costs of high releases
- Pits lake community against coastal areas
- Account for wet weather cycle

Study Goals & Objectives

Implement a new Lake Regulation Schedule supported by a Supplemental Environmental Impact Statement by January 2007

Objectives of the new regulation schedule

- Ensure public health and safety
- Manage Lake Okeechobee at lower lake levels
- Reduce high regulatory releases to the estuaries
- Continue to meet Congressionally authorized project purposes

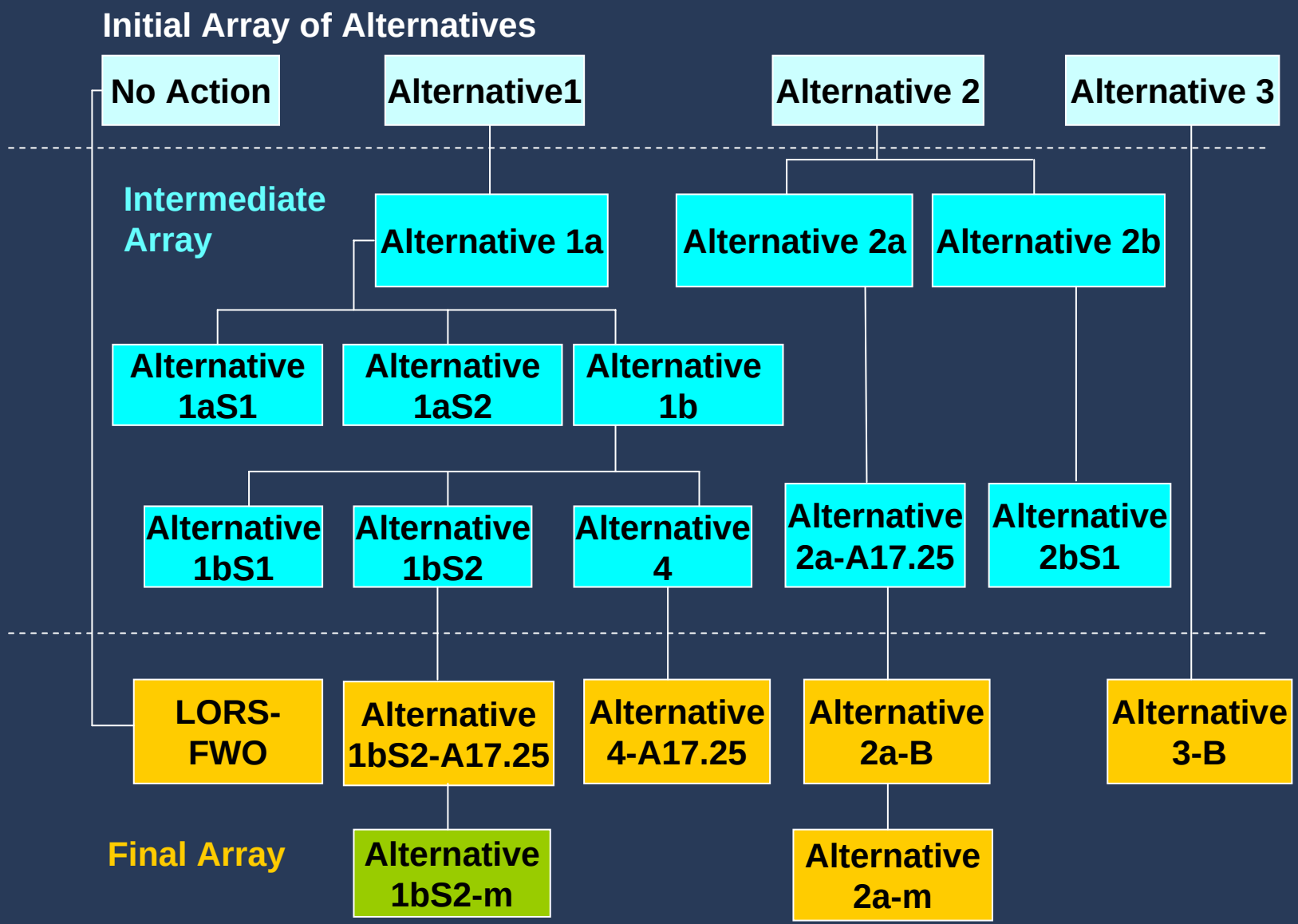
Study Assumptions

- Existing condition (2007)
- Operational guidelines consider period of record (1913 - current)
- Temporary forward pumps will be available by SFWMD
- SFWMD provided a surrogate for Supply Side Management line (lowered one foot)
- New schedule's anticipated period of use is 2007 - 2010
- Corps will initiate new Lake Okeechobee Regulation Study & EIS in 2007 to capture Acceler8 and other CERP Band 1 projects, and permanent forward pumps, scheduled for implementation in 2010

Study Constraints

- Period of record is 36 years (1965 - 2000)
- Herbert Hoover Dike integrity (Lake not to exceed 17.25)
- Existing systems' conveyance capacity
- Stormwater Treatment Areas water quality treatment capacity (64,000 acre-feet annual average)
- Existing regulation schedules for water conservation areas and Kissimmee River chain of lakes

Alternatives Evaluated



Final Array

Tentatively Selected Plan
1bS2-m

- Allows for quicker response to inflows
- Reduces high lake conditions
- Improves optimum flow to the estuaries

TSP 1bS2-m flexibility

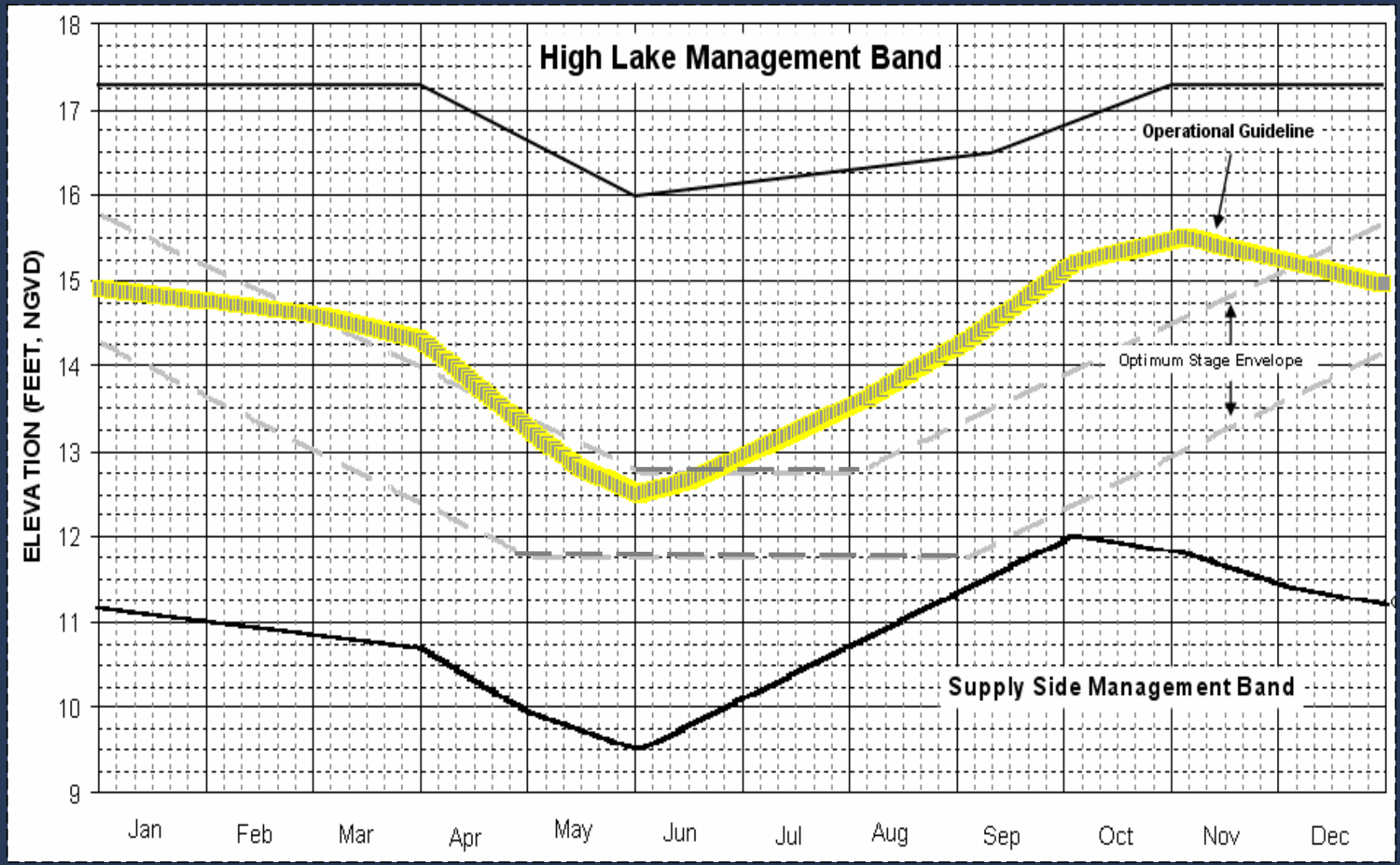
High Lake Management Band: Up to maximum capacity to tide and WCA

Operational Band:

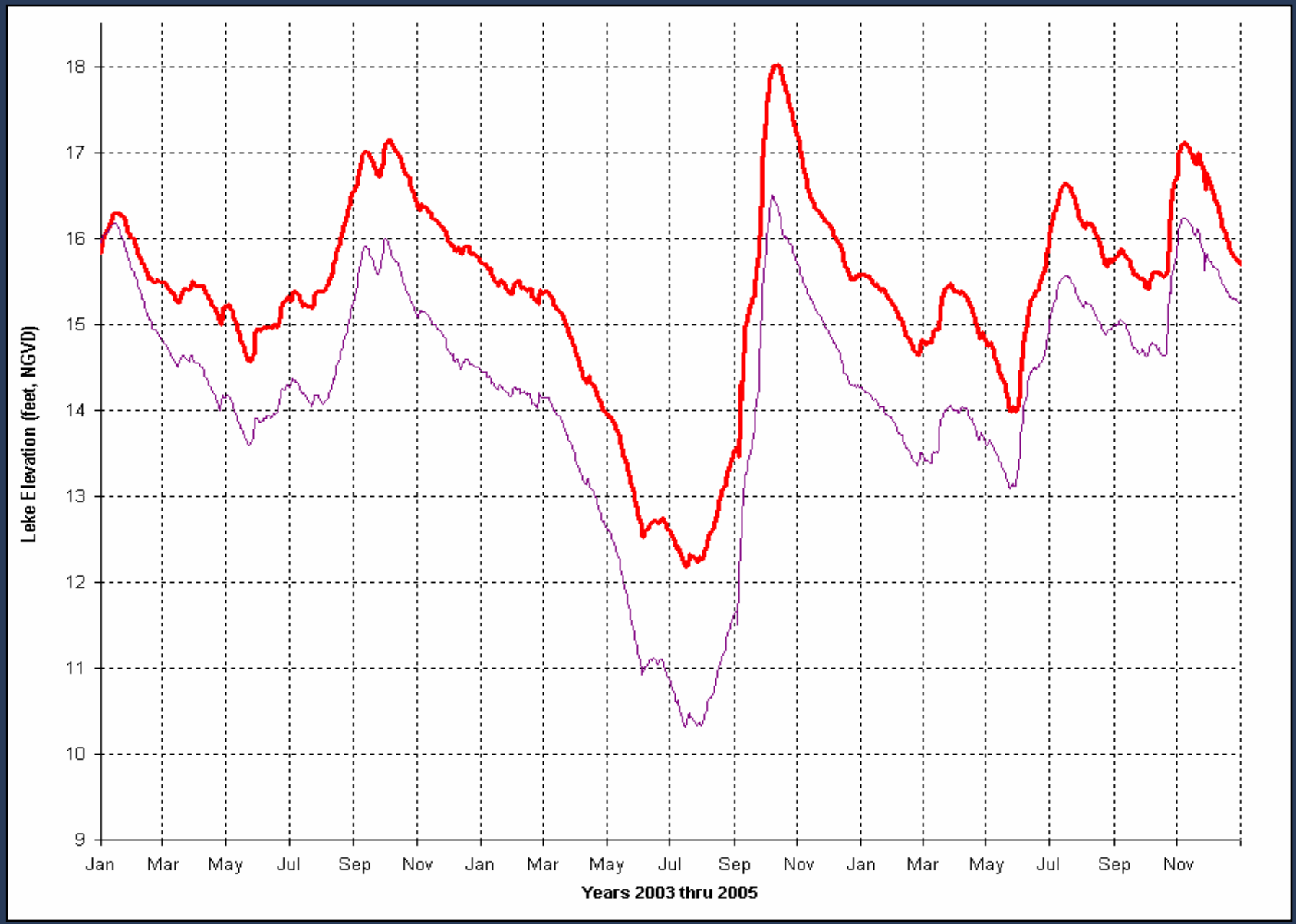
- **High Stage (15.35 - 17.25)**: Up to maximum pulse releases to steady flow up to 6,500 at S-77 (*Moore Haven*); 2,800 cfs at S-80 (*St. Lucie*); and, WCA from 0 to max
- **Intermediate Stage (14.90 - 16.60)**: From environmental base flow of 450 cfs to the Caloosahatchee Estuary up to 6,500 at S-77; releases from 0 up to 2,800 cfs at S-80; and, WCA from 0 to max
- **Low Stage/ Base Flow (9.50 - 16.15)**: From no releases to environmental base flow of 450 cfs to the Caloosahatchee Estuary up to 4,500 at S-77; releases from 0 up to 1,800 cfs at S-80; and, WCA from 0 to max

Supply Side Management Band: SFWMD water supply releases

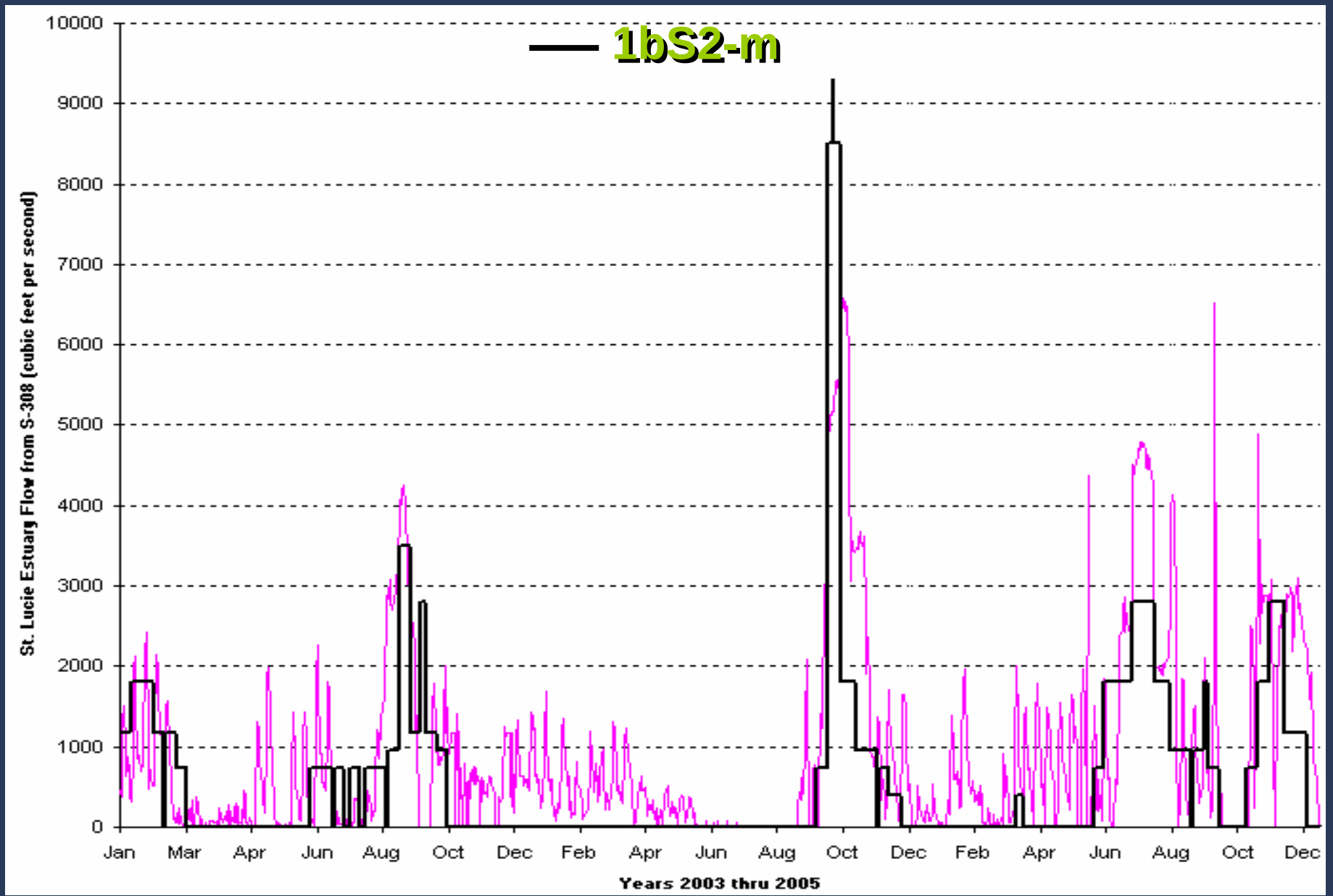
TSP 1bS2-m Regulation Schedule



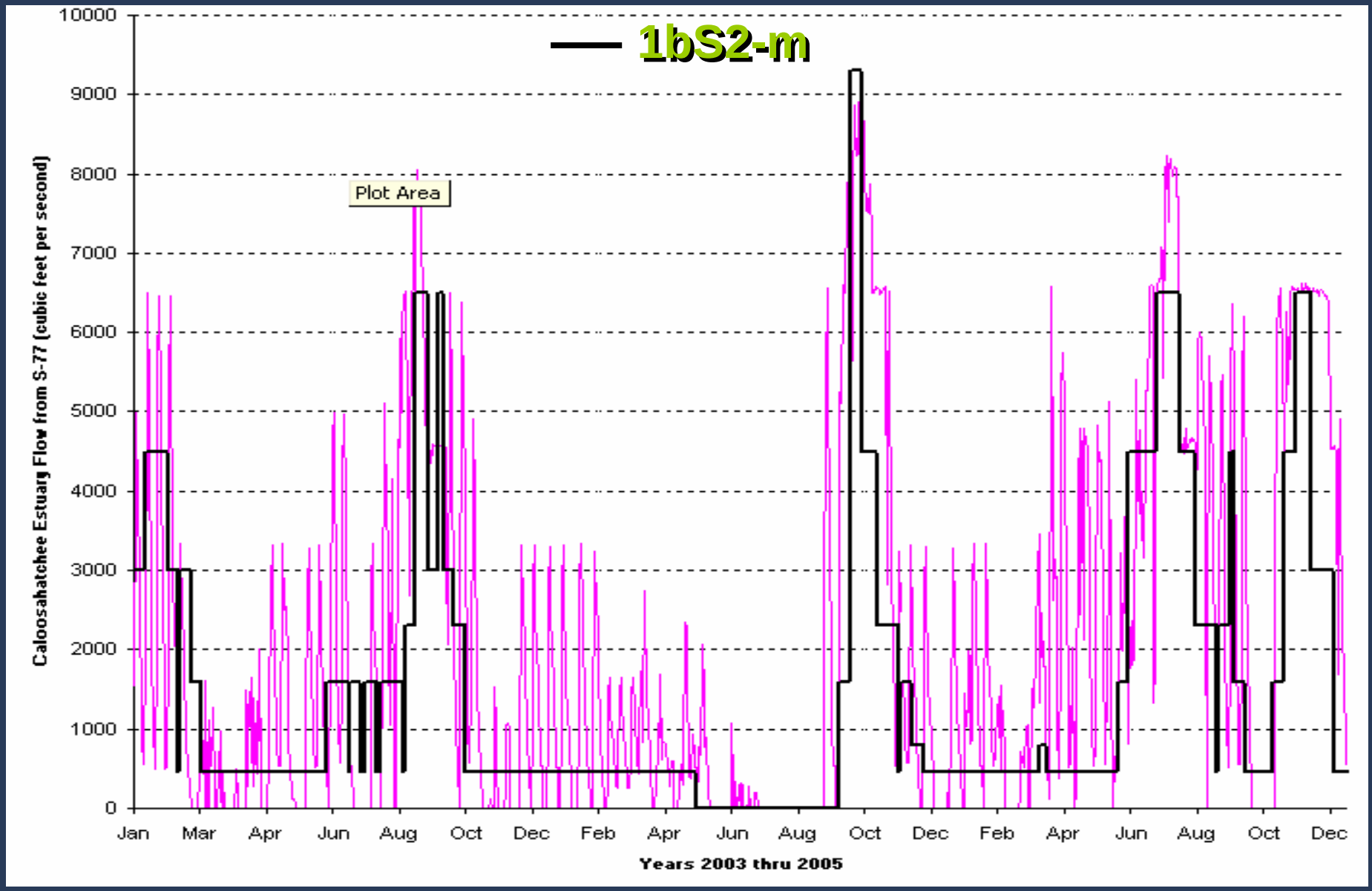
Actual 2003-2005 —— 1bS2-M ——



Actual 2003-2005 to St Lucie from the lake



Actual 2003-2005 to Caloosahatchee from the lake



Performance of Alternatives

- Evaluated using SFWM 2 x 2 Model
  - Uses 36-year period of record (1965 - 2000)
- Evaluated against CERP-based performance measures
  - Flood Control / Public Safety
  - Caloosahatchee Estuary
  - St. Lucie Estuary
  - Lake Okeechobee
  - Water supply
  - Navigation
  - Greater Everglades

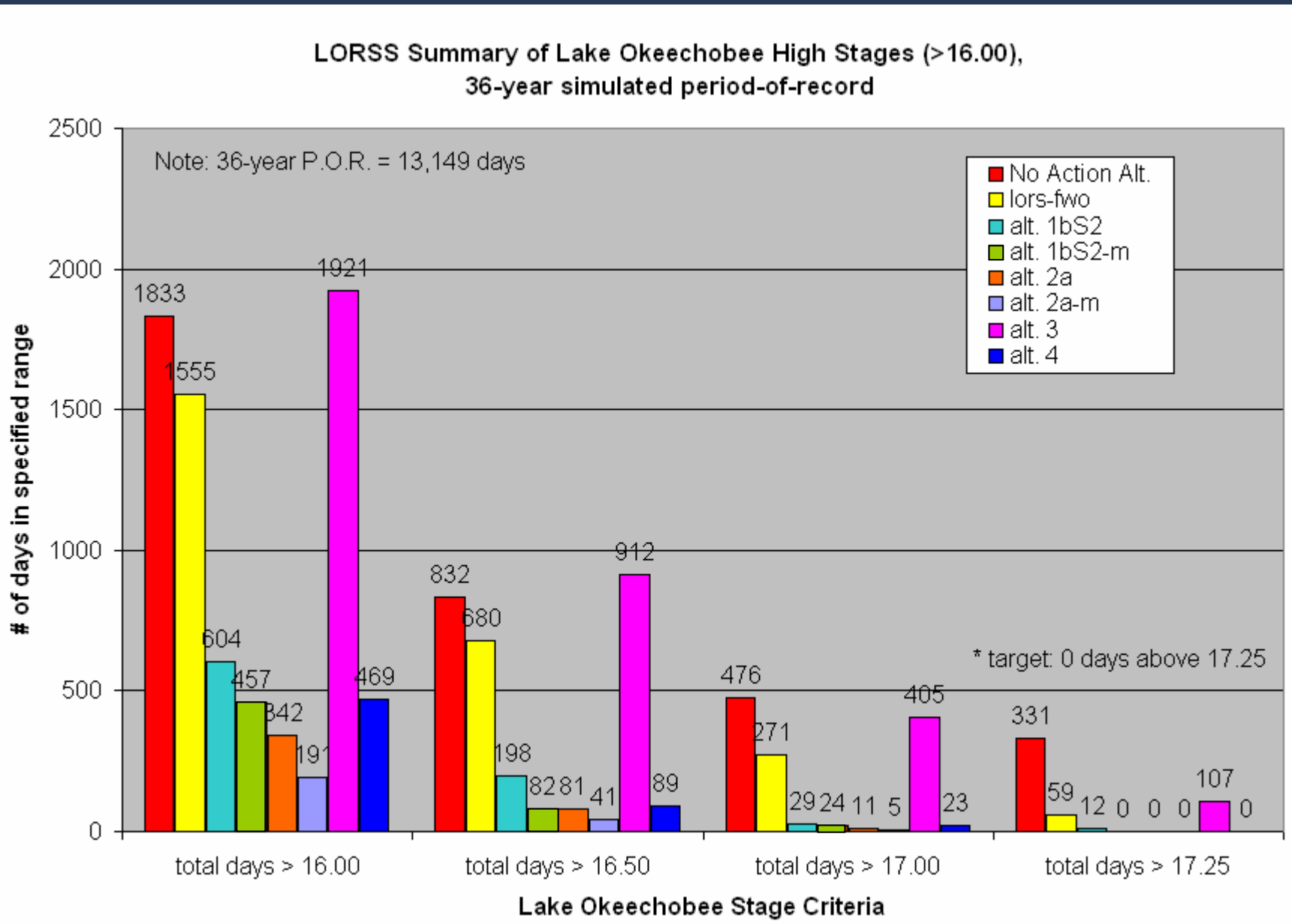
Flood Control – Public Safety

16.00 to 17.25 lake elevations

- High trends in duration of days

	1bS2	No-Action
2a	1bS2-m	LORS-FWO
2a-m	4	3

Best **Worst**


LORSS Summary of Lake Okeechobee High Stages (>16.00),
36-year simulated period-of-record
Note: 36-year P.O.R. = 13,149 days
No Action Alt.
lors-fwo
alt. 1bS2
alt. 1bS2-m
alt. 2a
alt. 2a-m
alt. 3
alt. 4
# of days in specified range
2500
2000
1500
1000
500
0
1833
1555
604
457
342
191
1921
469
832
680
198
82
81
41
912
89
476
271
29
24
11
5
405
23
331
59
12
0
0
0
107
0
* target: 0 days above 17.25
total days > 16.00
total days > 16.50
total days > 17.00
total days > 17.25
Lake Okeechobee Stage Criteria

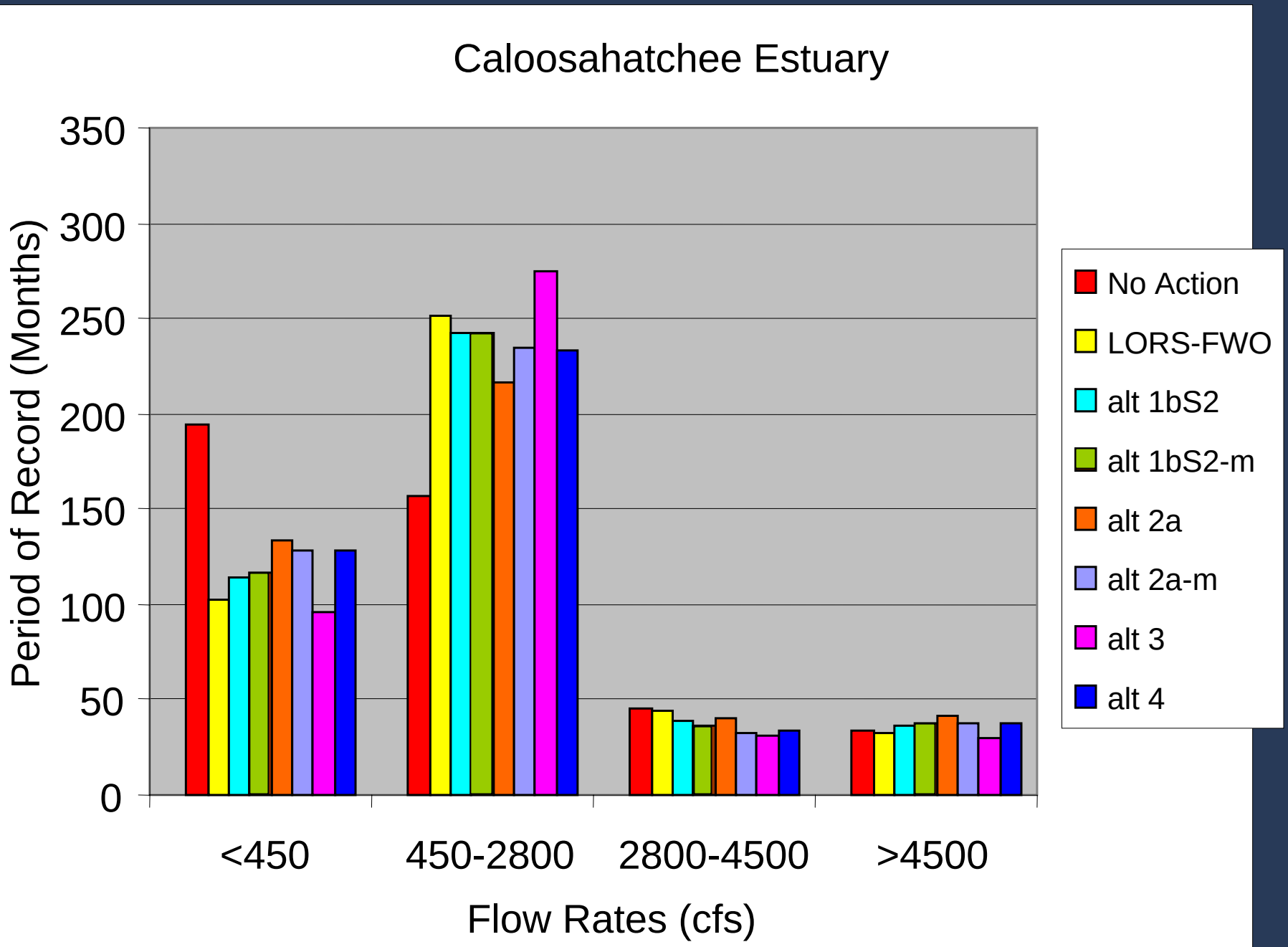
Caloosahatchee Estuary

5 performance measures

- Four flow rate ranges (<450 cfs, **450 to 2800 cfs,** 2800 to 4500 cfs, and >4500 cfs)
- Mean Moving Weekly Flows >4500 cfs

3
LORS-FWO
1bS2
1bS2-m
2a-m
4
2a
No-Action

Best **Worst**


Caloosahatchee Estuary
Period of Record (Months)
350
300
250
200
150
100
50
0
<450
450-2800
2800-4500
>4500
Flow Rates (cfs)
No Action
LORS-FWO
alt 1bS2
alt 1bS2-m
alt 2a
alt 2a-m
alt 3
alt 4

St. Lucie Estuary

5 performance measures

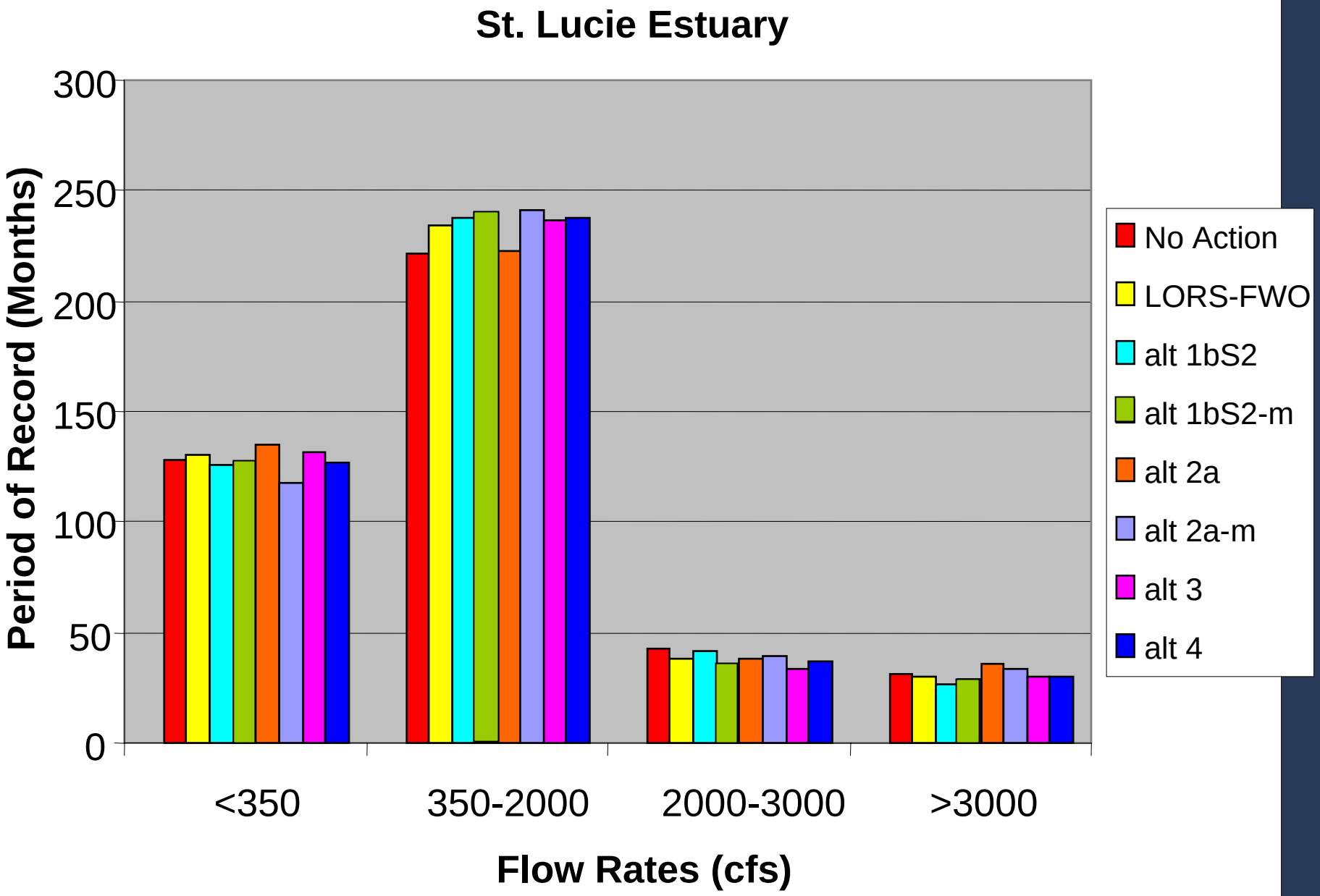
- Four flow rate ranges (<350 cfs, **350 to 2000 cfs**, 2000 to 3000 cfs, and >3000 cfs)
- Mean moving 2-week flows >3000 cfs

2a-m
1bS2-m
1bS2
4

LORS-FWO
3

No-Action
2-a

Best **Worst**


St. Lucie Estuary
Period of Record (Months)
300
250
200
150
100
50
0
<350
350-2000
2000-3000
>3000
Flow Rates (cfs)
No Action
LORS-FWO
alt 1bS2
alt 1bS2-m
alt 2a
alt 2a-m
alt 3
alt 4

Lake Okeechobee
(Environmental Impacts)

6 performance measures

- Above stage envelope

2a
2a-m
4

1bS2-m
1bS2

LORS-FWO
No-Action
3

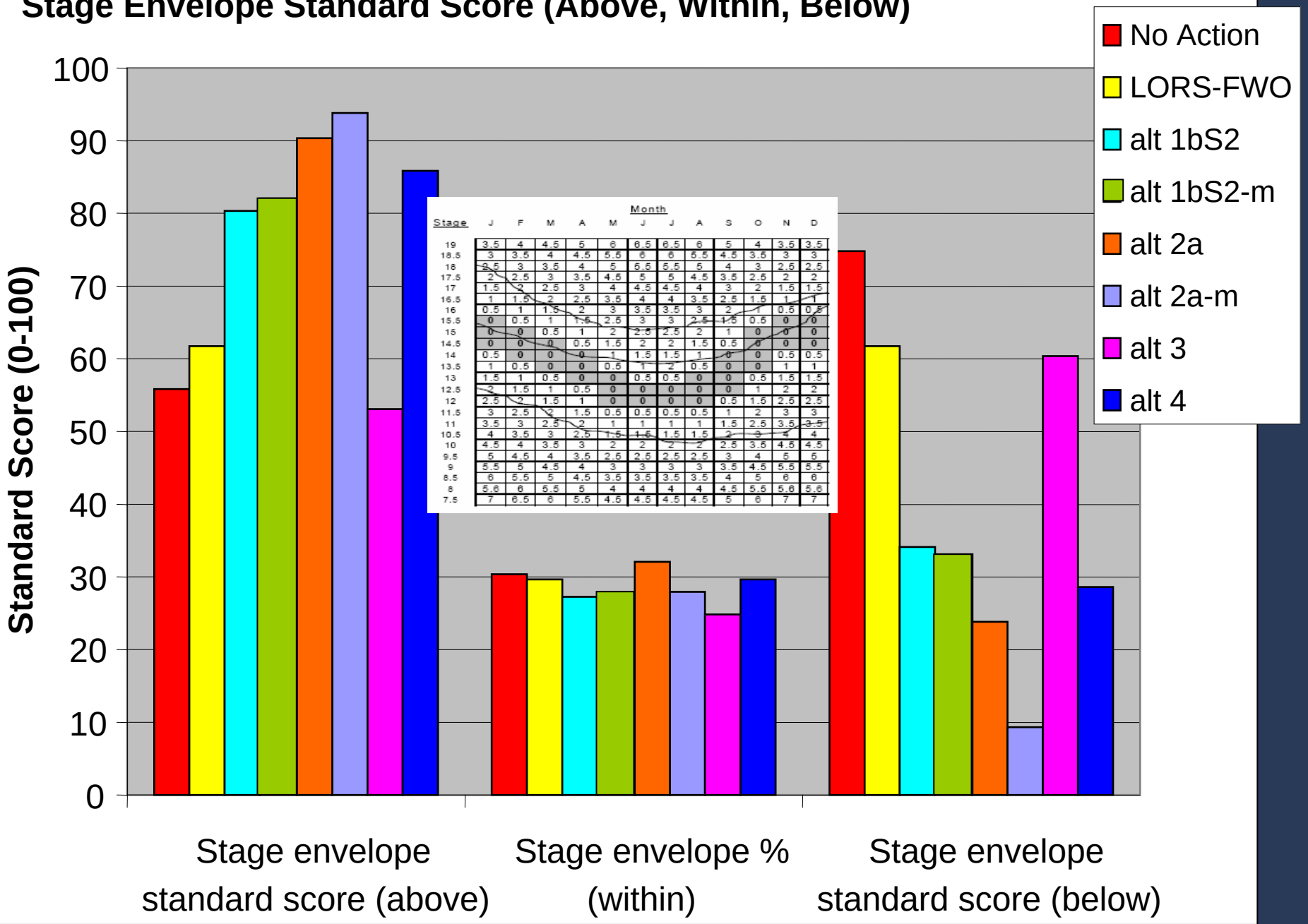
Best **Worst**

Lake Okeechobee
(Environmental Impacts)

6 performance measures

- Below stage envelope

Stage Envelope Standard Score (Above, Within, Below)



Month

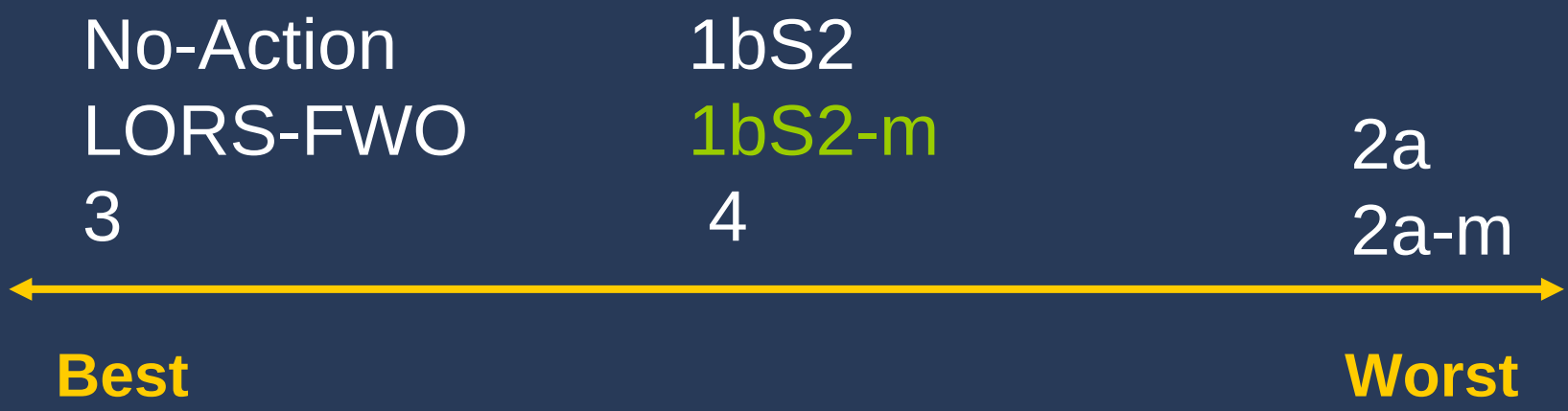
Stage	J	F	M	A	M	J	J	A	S	O	N	D
19	3.5	4	4.5	5	6	6.5	6.5	6	5	4	3.5	3.5
18.5	3	3.5	4	4.5	5.5	6	6	5.5	4.5	3.5	3	3
18	2.5	3	3.5	4	5	5.5	5.5	5	4	3	2.5	2.5
17.5	2	2.5	3	3.5	4.5	5	5	4.5	3.5	2.5	2	2
17	1.5	2	2.5	3	4	4.5	4.5	4	3	2	1.5	1.5
16.5	1	1.5	2	2.5	3.5	4	4	3.5	2.5	1.5	1	1
16	0.5	1	1.5	2	3	3.5	3.5	3	2	1	0.5	0.5
15.5	0	0.5	1	1.5	2.5	3	3	2.5	1.5	0.5	0	0
15	0	0	0.5	1	2	2.5	2.5	2	1	0	0	0
14.5	0	0	0	0.5	1.5	2	2	1.5	0.5	0	0	0
14	0.5	0	0	0	1	1.5	1.5	1	0	0	0.5	0.5
13.5	1	0.5	0	0	0.5	1	2	0.5	0	0	1	1
13	1.5	1	0.5	0	0	0.5	0.5	0	0	0.5	1.5	1.5
12.5	2	1.5	1	0.5	0	0	0	0	0	1	2	2
12	2.5	2	1.5	1	0	0	0	0	0.5	1.5	2.5	2.5
11.5	3	2.5	2	1.5	0.5	0.5	0.5	0.5	1	2	3	3
11	3.5	3	2.5	2	1	1	1	1	1.5	2.5	3.5	3.5
10.5	4	3.5	3	2.5	1.5	1.5	1.5	1.5	2	3	4	4
10	4.5	4	3.5	3	2	2	2	2	2.5	3.5	4.5	4.5
9.5	5	4.5	4	3.5	2.5	2.5	2.5	2.5	3	4	5	5
9	5.5	5	4.5	4	3	3	3	3	3.5	4.5	5.5	5.5
8.5	6	5.5	5	4.5	3.5	3.5	3.5	3.5	4	5	6	6
8	5.6	6	5.5	5	4	4	4	4	4.5	5.5	5.6	5.6
7.5	7	6.5	6	5.5	4.5	4.5	4.5	4.5	5	6	7	7

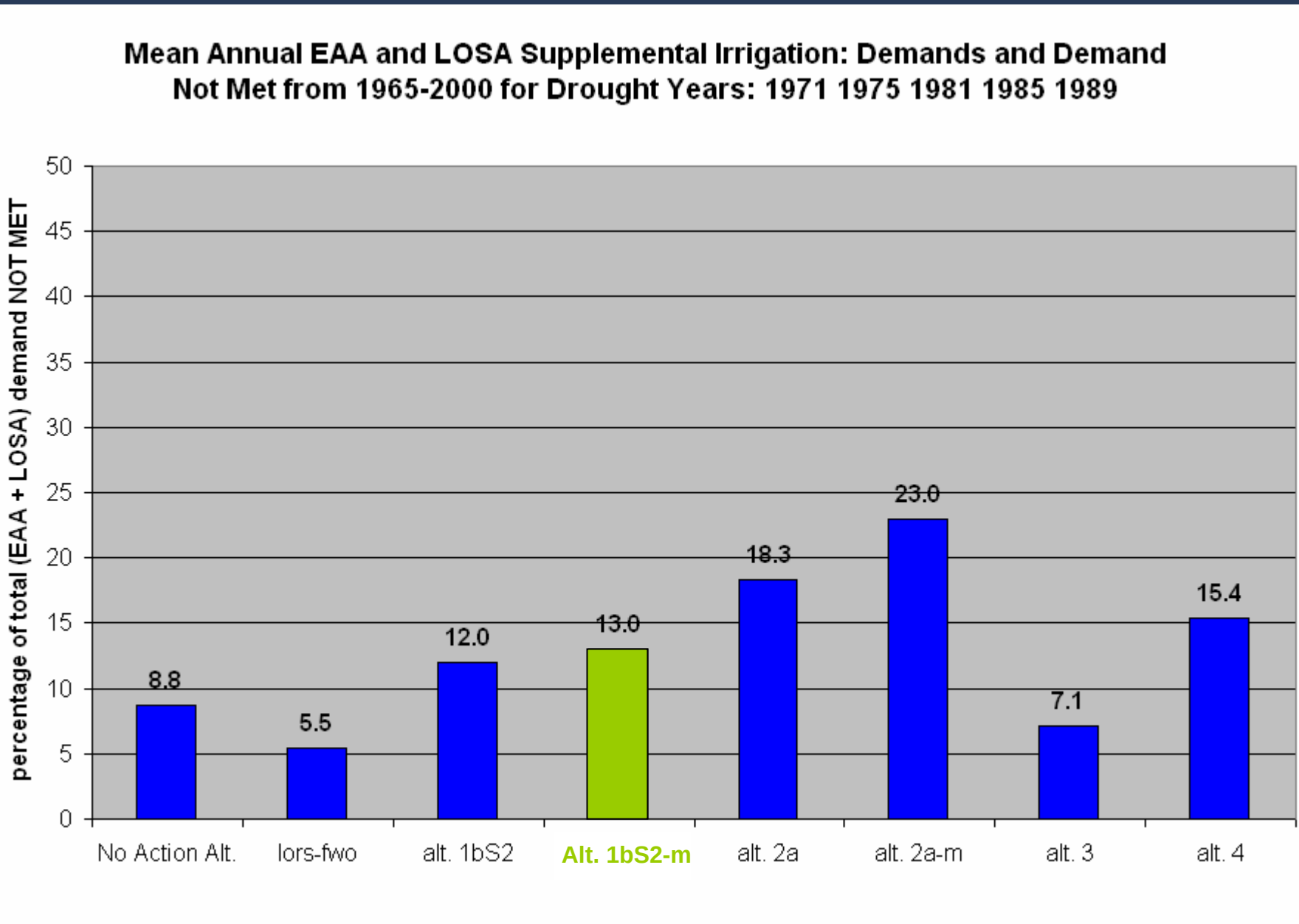
Water Supply

(EAA / LOSA)

9 performance measures

- Focus on three additional primary measures recommended by SFWMD




Mean Annual EAA and LOSA Supplemental Irrigation: Demands and Demand Not Met from 1965-2000 for Drought Years: 1971 1975 1981 1985 1989
percentage of total (EAA + LOSA) demand NOT MET
50
45
40
35
30
25
20
15
10
5
0
8.8
5.5
12.0
13.0
18.3
23.0
7.1
15.4
No Action Alt.
lors-fwo
alt. 1bS2
Alt. 1bS2-m
alt. 2a
alt. 2a-m
alt. 3
alt. 4

Navigation

All alternatives increased the number of days that the lake fell below 12.56

Greater Everglades

5 performance measures

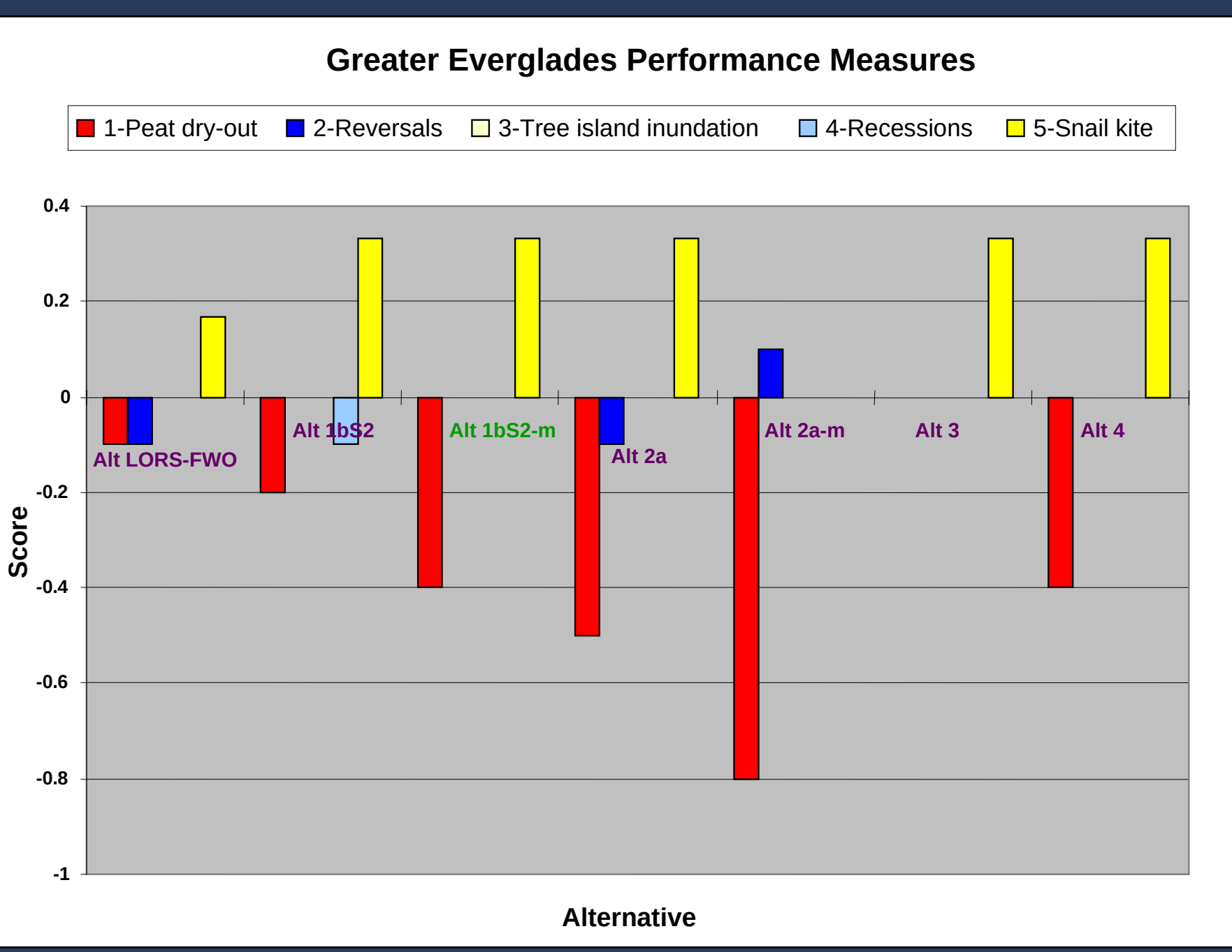
- Peat dry-out, reversals, tree island, recessions, snail kite

1bS2
3
LORS-FWO

1bS2-m
4

2a
2a-m

Best **Worst**


Greater Everglades Performance Measures
1-Peat dry-out
2-Reversals
3-Tree island inundation
4-Recessions
5-Snail kite
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Score
Alt LORS-FWO
Alt 1bS2
Alt 1bS2-m
Alt 2a
Alt 2a-m
Alt 3
Alt 4
Alternative

Final Analysis

- Alternatives
  - LORS-FWO, 3
  - 2-a, 2a-m, 4
  - 1bS2
- **1bS2-m**
  - Best balance to meet objectives

Milestone Schedule

DWCP - Draft Water Control Plan
DSEIS - Draft Supplemental Environmental Impact Statement
WCP - Water Control Plan
SEIS - Supplemental Environmental Impact Statement
CAR - Coordination Act Report - Fish and Wildlife Service

Public Coordination

- 45-day public comment period for draft SEIS and WCP begins in August
- Regional public meetings in September

Public Comments

Jacksonville District website
www.saj.usace.army.mil

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Questions?